NATURAL RESOURCES CONSERVATION SERVICE
MONTANA CONSERVATION PRACTICE STANDARD

PASTURE AND HAY PLANTING (ACRE)

CODE 512

DEFINITION

Establishing native or introduced forage species.

PURPOSE

- Establish adapted and compatible species, varieties, or cultivars for forage production.
- Improve or maintain livestock nutrition and/or health.
- Balance forage supply and demand during periods of low forage production.
- Reduce soil erosion and improve water quality.
- Increase carbon sequestration.
- **Provide food and cover for wildlife.**
- **Improve soil quality/health.**

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on lands where forage production and/or conservation are needed and feasible.

CRITERIA

General Criteria Applicable to All Purposes

Plant species and their cultivars shall be selected based upon:

- Climatic conditions, such as annual rainfall, seasonal rainfall patterns, growing season length, humidity levels, **day length, radiation, heat, wind,** temperature extremes and the USDA Plant Hardiness Zones.
- Soil condition and position attributes such as pH, available water holding capacity, **texture,** aspect, slope, drainage class, fertility level, salinity, **sodicity**, depth, flooding and ponding, and levels of toxic elements that may be present.
- Resistance to disease and insects common to the site or location.
- **Desired plant characteristics relative to site and objectives including tolerance to flooding, re-growth ability, root system, relative stand life, drought tolerance, response to irrigation, tendency to produce bloat, forage quality, palatability for livestock and wildlife, tolerance to grazing, and soil protection characteristics.**

Specified seeding/plant material rates, methods of planting and date of planting shall be consistent with documented guidance cited by plant materials program, research institutions or agency demonstration trials for achieving satisfactory establishment. **Montana Plant Materials Technical Note No. 46 provide seeding rate specifications and recommended cultivars for ALL vegetative practices and are required to be used for design purposes.**

Seeding rates will be calculated **based on a pure live seed (PLS) basis.**

Plant to proper depth ensuring seed or planting material will contact soil moisture uniformly **(optimize seed to soil contact).**

NRCS, MT
February 2006

Note: This type of font (AaBbCcDdEe 123…) indicates NRCS National Standards.
This type of font (AaBbCcDdEe 123…) indicates Montana Supplement.

Prepare site to provide a medium that does not restrict plant emergence. **Seedbed preparation should be completed that provides a firm, weed-free seedbed that eliminates seedling competition from weedy species.**

Planting dates shall be scheduled during periods when soil moisture is adequate for germination and establishment.

All seed and planting materials shall meet state quality standards. **Seed will comply with current Federal and Montana State seed quality criteria. See FOTG, Section I, State/Local Laws for the Montana Agricultural Seed Act and Administrative Rules, State of Montana, Department of Agriculture.**

Select plants that according to federal, state, or local regulations are not considered noxious species.

Fertilizer and soil amendment recommendations shall be based on results from a current soil test. Application shall be appropriately placed and timed to be effective.

If needed, legume seed shall be inoculated with the proper species of viable Rhizobia before planting.

If using coated seed, recalibrate the planting equipment to deliver the same number of seed per area as would be applied with non-coated seed.

Livestock shall be excluded until the plants are well established.

Additional Criteria for Establishing Adapted and Compatible Species, Varieties or Cultivars for Forage Production

Select forage species based on the intended use, realistic expected yield, maturity stage, compatibility with other species and level of management willing to provide. Plant adaptation to the proposed planting area shall be verified prior to planting.

Additional Criteria for Improving or Maintaining Livestock Nutrition and/or Health

Establish forage species that are most capable of meeting the desired level of nutrition (quantity and quality) for the kind and class of the livestock to be fed.

Additional Criteria for Balancing the Forage Supply and Demand during Low Forage Production Periods

Select plants that will produce forage for use during periods when other on-farm/ranch forage does not meet livestock needs. Forage species selected shall balance or help balance the dry matter demand of the animals for the desired period of time.

Additional Criteria for Reducing Erosion and Improving Water Quality

Plants shall provide adequate ground cover, canopy cover, root mass and vegetative retardance to protect soil against wind and water erosion.

Additional Criteria to Increase Carbon Sequestration

For optimal carbon storage, select species that increase site biomass.

Additional Criteria to Provide Food and Cover for Wildlife

To benefit targeted wildlife species, refer to the Field Office Technical Guide (FOTG), Section IV– Practice Standard and Specification for Upland Wildlife Habitat – Code 645 for species selection and season of use. When planting is for wildlife food supply, allow for un-harvested areas to provide the highest quantities of forage.

Additional Criteria to Improve Soil Quality/Health

When soil health or soil quality is a concern, utilize the Soil Conditioning Index (SCI) for design purposes to determine an adequate rotation of crops/forage.

CONSIDERATIONS

In areas frequented by high density of animals, establish persistent species that can tolerate close grazing and trampling.

Where wildlife management is an objective, use an approved habitat evaluation procedure to aid in selecting plant species and providing for other habitat requirements.

Where air quality concerns exist, site preparation techniques should be utilized that will minimize airborne particulate matter generation and transport.

PLANS AND SPECIFICATIONS

Specifications for the establishment of pasture and hay planting shall be prepared for each site or management unit according to the Criteria and Considerations described in this standard, and shall be recorded on specification sheets, job sheets, in narrative statements in the conservation plan, or other acceptable documentation.

A pasture and hayland planting plan will include the following information:

1. Location map - field numbers and a map or sketch of the area to be planted.

2. Measured acres.

3. Date practice scheduled and applied.

4. Seedbed preparation used.

5. Seeding method and depth of seeding.

6. Companion crop (if used) and rate.

7. Erosion prediction before and after.

8. Mixture and seeding rate (PLS), including selected cultivars.

9. Seed inoculation or treatment used.

10. Protection provided during establishment period.

11. The Montana Pasture and Hay Planting Specification and Job Sheet are applicable to this practice and is required.

OPERATION AND MAINTENANCE

The operator will inspect and calibrate equipment prior to use to insure proper rate, distribution and depth of planting material.

Growth of seedlings or sprigs shall be monitored for water stress. Depending on the severity of drought, water stress may require reducing weeds, early harvest of any companion crops, irrigating when possible, or replanting failed stands.

Invasion by undesirable plants shall be controlled by cutting, using a selective herbicide, or by grazing management by manipulating livestock type, stocking rates, density, and duration of stay.

Insects and diseases shall be controlled when an infestation threatens stand survival.

Evaluate forage stands each season or as needed to determine management inputs needed to achieve the desired purpose(s).

New seedings will not be grazed or hayed until the stand has matured beyond the seedling stage.

REFERENCES

Predicting Soil Erosion by Water: A Guide to Conversation Planning with the Revised Universal Soil Loss Equation (RUSLE), USDA ARS Ag. Handbook No. 703. January 1997.

USDA, Natural Resources Conservation Service, FOTG, Section IV, Practice Standard and Specification for Upland Wildlife Habitat Management – Code 645.

USDA, Natural Resources Conservation Service, National Agronomy Manual, Third Ed., Part 503 – Crop Production, June 2000.

USDA, Natural Resources Conservation Service, Plant Materials Technical Note No. 46, Seeding Rates and Recommended Cultivars, August 2004.

Montana Interagency Plant Materials Handbook, Montana State University Extension Service, EB 69, April 1993.

Soil Improvement with Legumes. Saskatchewan Soil and Crop Management Subcouncil, March 1995.

Dryland Pastures in Montana and Wyoming: Species and Cultivars, Seeding Techniques and Grazing Management. Montana State University Extension Service, EB 19, Fall 2003.

Species Selection, Seeding Techniques and Management of Irrigated Pastures in Montana and Wyoming, Montana State University Extension Service, EB 99, April 1991.

USDA, Natural Resources Conservation Service, FOTG, Section IV, Practice Standard and Specification for Nutrient Management – 590.

Tips for Drilling Chaffy Grass Seed: Attention to Detail Essential, Land and Water Magazine, July/August 1997.

USDA, Plant Hardiness Zone Map. USDA ARS, Miscellaneous Publication No. 1475, January 1990.